



Exploring in Setting a Model for Islamic Supply Chain in Malaysia

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ABSTRACT

This conceptual paper is endeavored to explore critical factors of the Islamic supply chain in Malaysia. Based on an extensive literature review, there are thirteen critical factors to be considered in order to successfully set a model for Islamic supply chain in Malaysia. The factors are (1) halalan toyyiban rules and policies; (2) supports from government and private; (3) halal hub; (4) differentiation between Muslim and non-Muslim suppliers; (5) halal control and labeling; (6) logistics control; (7) halal quality control; (8) supply chain resources; (9) halal supply chain business process; (10) supplier network structure; (11) halal supply chain performance; (12) JAKIM certification process; (13) halal traceability and tracking system. All the critical factors will be considered in developing a new model for Islamic supply chain in Malaysia.

Keywords: Critical Factor, Islamic Supply Chain, Malaysia

JEL Classification: R41

1. INTRODUCTION

The 2015-2016 state of the Global Islamic Economy Report (Thomson, 2015) stated that in 2014, Muslims' population comprised 1.7 billion people. By 2030, the population is estimated to continually increase to 2.2 billion. Annually, the population grows at 1.5%, which is approximately twice the growth rate of non-Muslim populations (Thomson, 2014). In line with the population growth, Thomson (2015) estimated that the global expenditure of Muslim consumers on food is worth US\$1.128 billion in 2014, which is expected to increase to US\$1.585 billion by 2020. This forms a potential core market for the halal food sector. This condition has truly a huge impact to the halal food supply and logistics. Malaysia, as stated in Thomson (2015), is the leading country in the Indicator by a large margin and hence the most developed Islamic economy ecosystem. The report highlighted that Malaysia is the best developed Islamic economy for halal food throughout the world. It is now a well-recognized pioneer in the halal food space leads the ranking with a healthy halal food ecosystem. According to Thomson (2015), the strong awareness through media coverage and events coupled with its market-leading regulations, and compliance processes make

Malaysia the most developed halal food economy. The commitment to become the biggest halal product exporter among the countries in the Organization of Islamic Cooperation was also addressed by its International Trade and Industry Minister Datuk Seri Mustapa Mohamed (Malay Mail Online, 2013). Its leadership in the halal food globally makes Malaysia an inventor and remains to lead with the best global halal standards, regulations and more significantly a compliance management process. A global Islamic economy summit was held in Madinat Jumeirah, Dubai on November 25, 2013. Foremost, they have talked about Islamic economy, which is specifically focusing to halal industry. Thus, it is obviously clear that halal industry is now not only fast growing, but worldwide countries have accepted it. This is a time of halal industry among the world Muslim countries to begin the revolution (of halal products) towards the halal supply chain as well as the halal value chain. Importantly, the collaboration and integration among the halal hubs in each country will provide a world highway in order to protect the halal integrity according to Islamic laws for the Muslim consumers as well as to halal brands and companies.

As the halal industry has been widely accepted across the countries around the world, its integrity or reliability of the products is

extremely important for Muslim's devotion. Presently, the long and complex global food supply chain overwhelmed the task of the providers to deliver a safety and halal without any doubts (*was-was*). Therefore, halal needs to be addressed throughout the supply chain from source to the point of end consumer. Therefore, there is an important role within the logistics industry or third party logistics sector to facilitate global halal food, cosmetics, and pharmaceutical supply chains. Nowadays, the principle constituting the halal supply chain still remains unclear (Talib et al., 2015). Various researchers offer dissimilar understanding of what makes the halal supply chain. In fact, current practice of supply chains has exposed a lot of misunderstandings on halal food's perspectives, especially from non-Muslim countries. Halal foods supply chains are vulnerable because of its quality to seek permission from halal bodies or Syari'ah departments that are responsible to issue the halal certificates. Moreover, securing the halal integrity as well as the quality is another important issue in halal supply chains (Bahrudin et al., 2011). Halal supply chains also must be avoided the doubt (*was-was*) (Kamali, 2009) and together with shubahah (mixing between halal and non-halal). The sensitivity of Muslim consumers towards halal foods is an important issue that needs to be controlled and recognized. At the same time, it is very crucial for halal certified food producers and suppliers along the supply chains to protect the integrity of the Muslim consumers and protecting their brands. In fact, the certification and handling issues of halal lack the brand names, the use of Quran verses or Arabic characters and lack of authority enforcement in resolving abused halal logos, contributing to the weaknesses faced by the halal integrity or reliability (Talib and Hamid, 2014). Presently, the halal supply chain is a relatively new area of research and numbers of the research have done on manufacturing industries. Furthermore, the academic publication concerning halal supply chain is still very limited (Talib and Hamid, 2014). In addition, prior studies indicated that there is no consensus regarding the important factors constituting the halal supply chain. As an example, Talib et al. (2015) considered government support, transportation planning, information technology, human-resource management, collaborative relationship, halal certification and halal traceability as the critical factors of the halal supply chain. In a different perspective, halal animal feed, halal slaughtering, the process of handling and storage, packaging, logistics, and retail were introduced by Yusoff et al., (2015) as a set of the important factors of the halal supply chain. Subsequently, Tieman (2013) and Tieman et al., (2012) highlighted the importance of transportation, storage, and terminal operations as the important factor of the halal supply chain. Moreover, contextualized in the halal meat industry, Zulfakar et al., (2013) conveyed the idea about the importance of complete segregation between halal and non-halal products, halal certification, and training for the employees of halal industries. As a conclusion, it is essential to identify and explore the factors that are essential in attempting to set a model for Islamic supply chain. Subsequently, based upon the result from the exploration, a model for halal supply chains (from Muslim perspective of suppliers, manufacturers, warehouse, and retailers) is suggested as it also becomes an obligation for a Muslim gets the status of "halalan toyyiban" (halal with high quality) in the context of Malaysia. The model would provide a theoretical and practical guidance for supply chain's members to

accommodate the world Muslim requirements in halal foods and other related industries.

2. LITERATURE REVIEW

2.1. Halal Concept

In Islam, it is compulsory for Muslims to exactly know whether the product categories that they consume and use are permitted by Islamic law (halal) or prohibited (non-halal). Halal refers to anything that is permissible according to the Islamic law (Alam and Sayuti, 2011). In other words, halal is anything that is allowable or acceptable to Muslims (Awan et al., 2015). The Department of Islamic Development Malaysia (JAKIM, 2016) also mentioned that halal is the things or actions that have permitted by Shariah law without any punishment imposed on the perpetrator. Thus, even though halal covers all the activities done by human being, the main focus is on the product consumption (Manzouri et al., 2013). Talib et al. (2015) highlighted that even though the halal and haram concepts are referring to food, but presently, it goes beyond food consumption and pervades non-food (pharmaceutical and cosmetics) and services (logistics, banking, and tourism). JAKIM (2016) stated that a halal product must comply with the following conditions; (1) it does not contain any parts of animals forbidden by Islamic law or not slaughtered in accordance with Islamic law; (2) it does not contain any unclean ingredients (*najs*) as according to Islamic law; (3) it is not provided, processed, or manufactured by using any tools that are contaminated by unclean ingredients punished by Islamic law; (4) it is not in contact or close to any haram items (or *najs*) during the process of providing, manufacturing or storing. To ensure the halal integrity, all the conditions must be fulfilled, not only in the production process but also in the upstream and downstream supply chain networks. The presence small amount of non-halal elements may void the halal status. This indicates the critical roles that must be played through the implementation of the halal supply chain.

2.2. The Brief Concept of Halal Supply Chain

Generally, the basic concept of the supply chain is the flow management of goods and services across a network of customers, enterprises, and suppliers (Russell and Taylor, 2011). It comprises the movement of material and products from the point of origin to the point of consumption. There are significant differences between conventional and halal supply chain. In terms of their objectives, the halal supply chain is addressed to preserve the integrity of halal products, whereas the conventional one is simply aimed to minimize cost and at the same time to maximize profit (Yusoff et al., 2015). As the implications from the objectives; in the halal supply chain, all the activities involved in the supply-chain networks must comply with the halal standard (Tieman, 2011). Direct contact with non-halal is strictly prohibited. Thus, complete segregation between halal and non-halal along the supply-chain networks is compulsory (Talib et al., 2015), because it would enhance the halal integrity. Conversely, the conventional supply chain does not consider this segregation. Thus, possibilities of the cross-contamination do exist, and there is no prohibition of mixing the halal and non-halal products.

Halal supply-chain management involves all aspects and activities along the supply-chain networks, from the origin to the

consumption points. As an integral part of halal business, halal supply chain involves all the supply-chain participants, including vendors, manufacturers, dealers, sellers and final customers. In addition, it must be rooted within the activities along the supply chain (e.g., logistics, purchasing, information management, value adding, etc.). More importantly, according to Talib et al. (2015), the halal supply chain must deliberate for all the halal elements, such as faith, trust, clean, safe, and non-halal free. To ensure that the supply chain is strictly operated by following the halal standard, Tieman et al. (2012) highlighted that the halal supply chain must be applied with a halal policy and a number of specific design parameters, including supply chain objective, network structure, business processes, resources, and performance metrics. In short, compared to conventional supply chain, there are more standards and regulations that must be deliberated in the halal supply chain. As an example, the work of Lodhi (2009) presented the process of halal food supply chain and its critical control points from the origin to the consumption points as depicted in Figure 1. Based on the figure, every single activity must be strictly controlled to ensure the integrity of the halal product. This is important to ensure the absence of non-halal elements that may ruin the halal status.

Taking the idea from Lodhi (2009) presented in Figure 1 as an important consideration, the subsequent section is attempting to explore the critical factors influencing the halal supply-chain management in the context of Malaysia.

2.3. Critical Factors of Halal Supply Chain

2.3.1. Halalan toyibah rules and policies

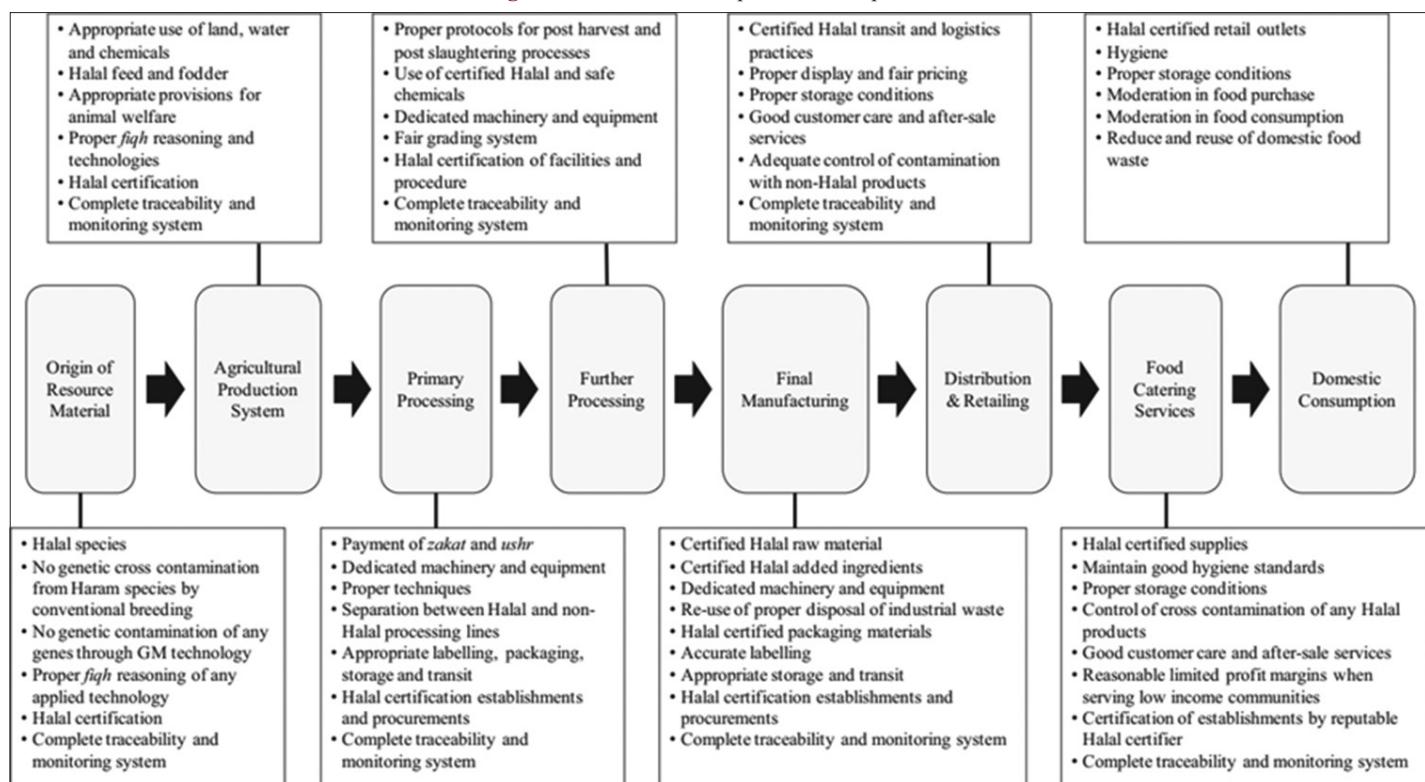
Tieman et al. (2012) and Tieman and Ghazali (2013) highlighted the importance of halal rule and policy as the manifestations of the

commitment at the top management level in the halal business in general and specifically, halal supply chain. According to Tieman et al. (2012), the policy also addresses "... the responsibility of an organization in protecting the halal integrity along the supply chain; scope of halal certification of the organization; the assurance to the consumer or customer (the promise); and method of assurance (control mechanism; covering aspects like halal committee, halal compliance officer and inspections)." In addition, the halal policy also encourages suppliers to have halal commitment (Tieman and Ghazali, 2013). In Malaysia, these policies have been established as stated in the Department of Standards Malaysia (2010a, 2010b, 2010c). The three documents have been established as the standards for management system requirements in halal business. The standards respectively are about transportation of goods and/or cargo chain services (MS 2400-1:2010 [P]), warehouse and related activities MS 2400-2:2010 [P]), and management system requirements for retailing MS 2400-3:2010 [P]). Previously, general guideline for halal food has also been established through Department of Standards Malaysia (2009), covering production, preparation, handling, and storage for halal foods. In addition, another document (i.e., MS 1900:2014) has also been established by the Department of Standards Malaysia (2014), which is the complete guide for Shariah-based quality management systems.

2.3.2. Supports from government and private

There is a strong support from government regarding the halal business in Malaysia. It can be proven from its efforts in ensuring that the halal business is operating in a proper way, which is in line with the Shariah law. Talib and Hamid (2014) stated that the government supports has been far-reaching from the material origins until final consumption. Some of the significant efforts

Figure 1: Critical control point of halal products



Source: Lodhi (2009), Zulfakar et al. (2013), and Talib et al. (2015)

given by government of Malaysia are dedicated halal authority, food premises, halal pharmaceutical and healthcare products, Shariah-compliant logistics, etc. The presence of JAKIM and Halal Industry Development Corporation (HDC) in the Malaysian halal business also indicated extraordinary commitment from the government. Besides as a halal certification authority, JAKIM had also produced the manual procedures of halal certification (JAKIM, 2015) and guidelines for appointment of foreign Islamic organization as the halal certification body for products to be exported into Malaysia (JAKIM, 2014). Furthermore, HDC is one-stop agency, which is responsible in auditing halal companies, issuing halal certification, consultations, trainings, and promoting halal business not only in domestic market but also in the international market (Talib and Hamid, 2014). More importantly, a number of rules, policies, and standards have been established by the government, such as the guideline for production, preparation, handling and storage of halal food MS 1500:2004 (Department of Standards Malaysia, 2004) and MS 1500:2009 (Department of Standards Malaysia, 2009); halalan toyyiban assurance pipeline MS 2400:2010 (Department of Standards Malaysia, 2010a, 2010b, 2010c), and requirement and guidance for shariah-based quality management system MS 1900:2014 (Department of Standards Malaysia, 2014). The halal business players must follow these guidelines in performing their business, starting from the material origin to the final consumption. However, supports and commitment from government are not enough to ensure that the halal business performs by following the Shariah law. It must be supported by all the business players and stakeholders.

2.3.3. Halal hub SCM

Recently, there was a special request from United Nation that all countries must have special halal hubs to cater for the halal products due to the increase of Muslims population throughout the world (Saifudin, 2015). A number of halal hubs have been established in Malaysia. For instances, the Northport established a halal warehouse certified under MS 2400 (Department of Standards Malaysia, 2010a, 2010b, 2010c). This halal warehouse is created to cater for the halal foods' raw materials. This halal hub also creates a samaq process for all the containers labeled as halal. In attempting to have a halal hub, Penang Port has also been starting to create a segregation of halal area and samaq process. The personnel have been trained to control and monitor the area. Similarly, in the Port Tanjung Pelepas, two blocks of halal warehouse are currently built to cater for the halal demand. Not only in the seaports, has a halal hub also been built in the Senai International Airport. A new large cold room warehouse is meanwhile under construction for local companies to cater for halal foods' storage to be exported to gulf countries by year 2017. At the same time, Iskandar Regional Development Authority is planning and setting a comprehensive halal center that includes lab and other requirements. Even though halal hubs in Malaysia are growing in number, utilizations of the hubs are still less effective and efficient. As an example, at the Port Klang Free Zone, its halal warehouse has not been fully utilized. The halal lab has not been built. Technical supports in terms of facility and documents are still considered at the initial stage. Improvement is still required in order to the halal hubs are fully utilized (Saifudin, 2015).

2.3.4. Differentiation between Muslim and non-Muslim suppliers

Halal products are not only produced by Muslims, but also by non-Muslims. Even though strict supervisions, assistance, counsels, and trainings could be performed, differentiation between Muslim and non-Muslim suppliers/producers is important to warrant the halal integrity. One of the important determinant factors of halal integrity is traceability. Through the differentiation, traceability of the products can be guaranteed. In addition, Tieman et al. (2012) suggested that differentiation between the suppliers (i.e., Muslims and Non-Muslims) should be performed in the whole process of logistics, including receiving, putting away, storing in storage, cross-docking, VAL, order picking, and shipping.

2.3.5. Halal control and labelling

According to Tieman (2011), halal certified companies are important to look beyond their production and ingredients. They should extend the control to the entire supply chain networks to ensure that all the processes involved in the operations are in compliance with Shariah law. The MS 1500:2009, issued by the Department of Standards Malaysia (2009), provided the general guidelines for the production, preparation, handling, and storage of halal foods. Using this document, all the related parties should understand the halal requirements to ensure halal processing of the products. According to Zailani et al., (2015), a proper training is required. To ensure the integrity of the halal products, all the ingredients must be halal. More importantly, contacts between the halal and non-halal products must be avoided during the entire processes (Tieman, 2013; Zailani et al., 2015). As transportation, storage, terminal, and cleansing operations were considered as important factors in the halal supply chain (Tieman, 2013; Tieman et al., 2012), the work of Tieman et al. (2012) provided a detail guideline regarding the halal control and assurance activities that must be performed within the four operations. To support the halal control, the correct labeling on halal food is essential for consumers because certain labels can often be misleading (Awan et al., 2015). Labeling is important for the purpose of verification of halal status and the product quality. Halal logo, HACCP, ISO, and other labels has become a common tool for the purpose of controlling the halal product.

2.3.6. Logistics control

Logistics was generally defined as transportation and distribution of goods and services from the point of origin to the point of consumption in order to meet requirements of customers (Grant et al., 2005). This definition implies that logistics cover all the activities and processes of distribution, storage, handling and procurement of products (Tieman, 2011). Nowadays, even though the halal and haram concepts are referring to foods and beverages, it goes beyond food consumption and pervades other areas, including logistics. This is important because, all the Muslims are obligatory to only take the halal products. As guided by Islamic law, any contact with haram must be avoided, because it affects the halal integrity (halalness) of the products. Thus, complete segregation between the halal and non-halal products must be ensured during the logistics processes. In other words, cross-contamination (i.e., mixing halal and non-halal) must be avoided. Additionally, risk of contamination must be

circumvented. According to Tieman (2013), risk is caused by doubt if something is truly halal, which may effect in rejection of the halal product. Tieman (2013) highlighted, it is contingent upon the characteristics of product, where ambient and unitized products have less risk than the refrigerated and bulk products. More importantly, vulnerability must be avoided; because less vulnerability indicates the robustness of logistics process. Tieman et al. (2012) suggested using dedicated logistics infrastructure, like a dedicated halal warehouse and transport. This may safeguard the halal integrity during the distribution process up to the point of customer purchase (Tieman et al., 2013).

2.3.7. Halal quality control

Shariaah law as the fundamental guide in developing the halal standard is importantly to be applied. It is compulsory that any products and services produced must relate to halal quality control as to ensure the Shariaah law fundamental guides are strictly adhered. With the halal certification and halal standard established by the government, any logistics supply providers and manufacturers are obliged to maintain the halal status of the halal services they offered (Illyas Tan et al., 2012), including the halal supply chain practice (Saifudin, 2015). With the Halal business now come in to major global business, the awareness of halal practices in the supply chain need to be seriously explored and educate as to maintain the fundamental guides of Shariaah law applied in the halal certification.

2.3.8. Supply chain resources

Resources are often recognized as an essential determinant factor of enhancing performance and competitive advantage. In the supply chain, resources describe the organization and information management (Tieman et al., 2012). Within the halal certified companies, according to Tieman et al. (2012), a halal committee is absolutely required to ensure that all the supply-chain processes and activities are in line with the halal standard, as guided by Department of Standards Malaysia (2010a, 2010b, 2010c). A number of responsibilities are given to the committee, such as drafting the halal rules and policies, at the same time; it could take responsibility as internal auditor, etc. In addition, Tieman et al. (2012) also emphasized the importance of training to enhance competency of all the personnel involved in the halal supply chain operations. The extensive training should be given to the operations' staff to ensure the halal integrity of the supply-chain operations. More importantly, in the halal supply chain, selection of suppliers should consider the specific halal aspects beyond the physical halal products and its ingredients (Tieman and Ghazali, 2013). Unlike the conventional supply chain, all the processes involved in the halal supply chain must be in line with the halal standards. Hence, selection of suppliers in the halal supply chain should consider the following aspects, physical halal products and its ingredients, halal policy, halal certificate, quality and safety standard (thoyyib), halal logistics, Islamic banking, and price (Tieman and Ghazali, 2013).

2.3.9. Halal supply chain business process

Tieman et al. (2012) stated the eight key supply chain business processes, consisting of customer relationship management, customer service management, demand management; customers

order fulfillment, manufacturing flow management, procurement, product development and commercialization, and returns. However, according to Tieman et al. (2012), order fulfillment, manufacturing flow management, and procurement are the most important among all the eight processes. They highlighted that in fulfilling the orders from customer, complete segregation between halal and non-halal products throughout the supply chain is strictly required. The manufacturing flow management is about physical handling of the products that must be controlled from the origin to the consumption points. In addition, procurement also plays an important role in the supply chain, which is according to Tieman et al. (2012), to define and manage the upstream supply chain networks. It covers purchasing strategy, selection of suppliers, ordering, evaluating suppliers, and determining the specification.

2.3.10. Supplier network structure

The supplier network structure is essential in the halal supply chain because the supply-chain integrity is a function of the integrity of supply chain partners. The structure is about the mutual and cooperative relationship between all the organizations throughout the supply-chain networks to enhance the mutual benefits. The potential benefits are in terms of managing, controlling, and improving the flow of materials and information (Tieman et al., 2012). As the halal supply chain is vulnerable, the network is important to avoid any risks caused by the supply-chain configurations (Tieman et al., 2012). Additionally, according to Tieman et al. (2012), to ensure the integrity of the halal product, all the parties involved should be halal certified. Thus, they can comply with all the needs of the halal supply chain.

2.3.11. Halal supply chain performance

Performance was commonly defined as a set of achievement gained after implementing a set of activities. In other words, it is a progress towards achieving predetermined objectives. In the context of the halal supply chain, the performance should be assessed in relation to the efficiency and effectiveness in protecting the halal integrity and robustness of a halal supply chain (Tieman et al., 2012). Tieman et al. (2012), the effectiveness of supply-chain processes is commonly measured in terms of process quality and waste. However, it seems that the two indicators would not be enough to measure the halal supply chain process. More comprehensive measure should be considered. A number of indicators should be included such as halal integrity achievement, quality, safety, environmental aspects, delivery lead time, productivity, cost, etc.

2.3.12. JAKIM certification process

To guarantee the integrity of the halal products, a halal certification body is required to examine the entire processes in the halal supply chain, starting from the point of origin to the point of consumption, before the products are certified to be in line with the pre-determined halal standard (Latif et al., 2014). Zailani et al. (2015) highlighted, especially for halal food, the certification body should assess the process from the preparation, slaughtering, ingredients used, cleaning, handling, processing, transportation and distribution. Manufacturers and marketers use the halal certification and logo to convince their target customers regarding the halalness of their products.

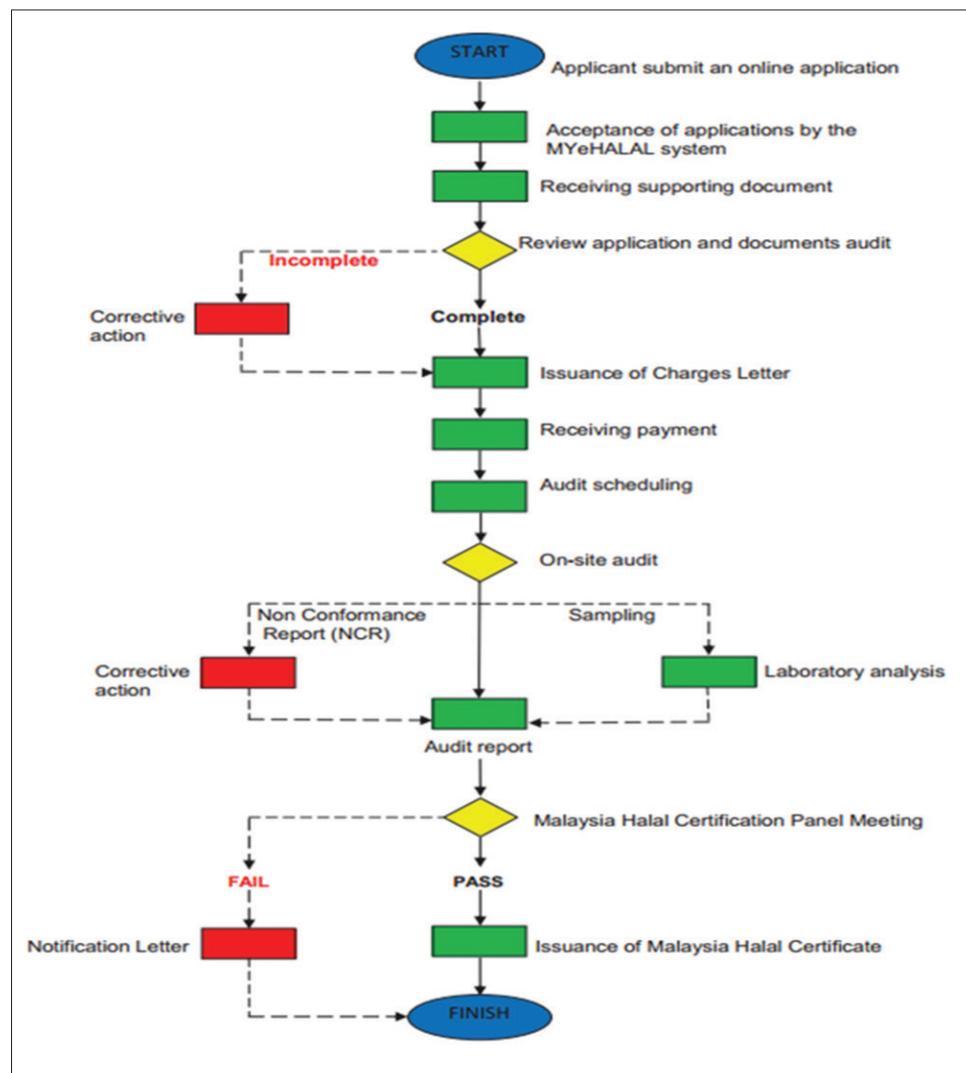
In Malaysia, the government has established a committee to evaluate the food, drinks, and goods utilized by Muslims in 1982, which is since 1997, recognized as Malaysia's Department of Islamic Development (JAKIM), which is under the purview of the Ministry in the Prime Minister's Department (Alam and Sayuti, 2011). Since 2002, all the halal certification activities are conducted by JAKIM (Tieman, 2015). Nowadays, JAKIM is responsible for the halal certification of food production (including slaughtering), cosmetics and personal care, pharmaceuticals, leather products, logistics and retail (JAKIM, 2015). The certification process is conducted based on the halal standards provided by Department of Standards Malaysia (2009, 2010a, 2010b, 2010c, 2014), which can be audited by various State Islamic Religious Affairs Councils or JAKIM and certified by JAKIM (Tieman, 2015). Recently, JAKIM has been not only responsible as a halal certification authority, but also establishing the manual procedure of halal certification and guideline for the appointment of foreign Islamic organization as the halal certification body for products to be exported to Malaysia (Talib and Hamid, 2014). Schematically, the process of halal certification by JAKIM is depicted in Figure 2. However, there are still a number of

weaknesses of the certification provided by the JAKIM. According to Talib and Hamid (2014), the use of fake halal certification is caused by the slow and inefficient process of halal certification. Talib and Hamid (2014) stated that the failure in providing the fast certification process was because of the lack of the research and development units as well as collaboration between JAKIM and third-party experts from universities in commissioning lab testing, analysis, and on-site inspection. In addition, as stated by Talib and Hamid (2014), it was found products with halal logo on packaging contained pork ingredients in the packaging. Hence, there is a lack of reliability and authenticity of the halal logo for certain products or certification bodies. Therefore, full control in the halal supply chain must be ensured to protect the integrity of the halal products.

2.3.13. Halal traceability and tracking system

Traceability and tracking system is a tool for communication making the information available along the supply chain. It is related to the collection, documentation, maintenance, and application of information regarding the entire processes along the supply-chain network (Zailani et al., 2010). It provides a

Figure 2: Flow chart of Malaysia halal certification process



Source: JAKIM (2015)

guarantee to the customer and other stakeholders in the origin, location and life history of a product, until the point of use of the product. According to Zailani et al. (2010), traceability represents the ability to conduct full backward and forward tracking to determine the exact position and life history of the product in the supply chain by means of recorded identification. Poniman et al., (2015) highlighted the need of knowledge sharing on products and processes along the supply chain. Ensuring the integrity of the halal products implied the need for effective traceability and tracking system in entire supply chain networks (Poniman et al., 2015), which requires effective collaboration among all the parties involved in the halal business, consisting of all the individuals and organizations that are directly and indirectly involved in the halal business from the farm to the fork. This is in line with the argument from Opara (2003) who argued that an effective traceability management system should involve all the parties in the supply chain, starting from primary producers to the individual customers. The parties are from purchasing production, marketing, sales and other relevant departments within the organization, suppliers, Islamic organizations, government, research institutes, as well as competitors (Poniman et al., 2015). Opara (2003) and Zailani et al. (2010) recommended an effective supply chain traceability system must incorporate six elements, namely product traceability, process traceability, input traceability, disease traceability, genetic traceability, and measurement traceability. Product traceability is related to the ability to trace the physical location of the products in the supply chain. Process traceability is to determine the sequence of events in the entire processes of the supply chain. Input traceability determines the type and origin of ingredients used to create the product. Disease traceability is addressed to monitor the epidemiology of biotic hazards such as bacteria, virus, etc., which possibly give risks for the human body. Genetic traceability to determine the genetic constitution of the product, including variety, type, origin, and alteration in the basic DNA structure. Lastly, measurement traceability is related to the individual measurement results regarding the quality, safety, etc.

3. RECOMMENDATION AND CONCLUSION

Based on the literature review, thirteen critical factors on the implementation of the Islamic supply chain have been identified. They are (1) halalan toyyiban rules and policies; (2) supports from government and private; (3) halal hub; (4) differentiation between Muslim and non-Muslim suppliers; (5) halal control and labeling; (6) logistics control; (7) halal quality control; (8) supply chain resources; (9) halal supply chain business process; (10) supplier network structure; (11) halal supply chain performance; (12) JAKIM certification process; (13) halal traceability and tracking system.

However, these factors should be verified and confirmed through extensive interviews with all the actors involved in the halal business, such as government, JAKIM, HDC, logistics players, etc. This confirmation is important to provide more accurate and deeper understanding regarding how the Islamic supply chain should be implemented in the context of Malaysia. Subsequently, a model of the Islamic supply chain in Malaysia could be established.

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